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## NOTICE OF ALLOWANCE AND FEE(S) DUE

22879 7590 09/03/2009

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
3404 E. Harmony Road  
Mail Stop 35  
FORT COLLINS, CO 80528

EXAMINER

ABEDIN, SHANTO

ART UNIT

PAPER NUMBER

2436

DATE MAILED: 09/03/2009

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,522	07/02/2003	Liqu Chen	B-5153 G21074-2	4783

TITLE OF INVENTION: METHOD AND APPARATUS FOR USE IN RELATION TO VERIFYING AN ASSOCIATION BETWEEN TWO PARTIES

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/03/2009

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE** OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

## HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

**IMPORTANT REMINDER:** Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

# **PART B - FEE(S) TRANSMITTAL**

**Complete and send this form, together with applicable fee(s), to:** Mail **Mail Stop ISSUE FEE**  
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**P.O. Box 1450**  
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**INSTRUCTIONS:** This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

22879 7590 09/03/2009

**HEWLETT-PACKARD COMPANY**  
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**FORT COLLINS, CO 80528**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

## **Certificate of Mailing or Transmission**

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/613,522 07/02/2003

Liqu Chen

B-5153 62107-4-2

4783

**TITLE OF INVENTION: METHOD AND APPARATUS FOR USE IN RELATION TO VERIFYING AN ASSOCIATION BETWEEN TWO PARTIES**

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1510	\$300	\$0	\$1810	12/03/2009

EXAMINER	ART UNIT	CLASS-SUBCLASS
ABEDIN, SHANTO	2436	380-030000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.  
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a **Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 \_\_\_\_\_  
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 \_\_\_\_\_  
 3 \_\_\_\_\_

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY AND STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee  
☐ Publication Fee (No small entity discount permitted)  
☐ Advance Order - # of Copies \_\_\_\_\_

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.  
☐ Payment by credit card. Form PTO-2038 is attached.  
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number \_\_\_\_\_ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature \_\_\_\_\_ Date \_\_\_\_\_  
 Typed or printed name \_\_\_\_\_ Registration No. \_\_\_\_\_

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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10/613,522

07/02/2003

Liqun Chen

B-5153 621074-2

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EXAMINER

ABEDIN, SHANTO

ART UNIT

PAPER NUMBER

2436

DATE MAILED: 09/03/2009

HEWLETT-PACKARD COMPANY  
Intellectual Property Administration  
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## Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 776 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 776 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

**Notice of Allowability****Application No.**

10/613,522

**Examiner**

SHANTO M. ABEDIN

**Applicant(s)**

CHEN ET AL.

**Art Unit**

2436

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the submissions dated 05/18/2009.
2. ☒ The allowed claim(s) is/are 1-11, 19-24 and 29.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some\* c) ☐ None of the:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.  
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached  
1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.  
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.  
**Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

/SHANTO M. ABEDIN/  
Examiner, Art Unit 2436

***DETAILED ACTION***

1. This office action is in response to the Appeal Brief filed on 05/18/2009. The finality of the previous office action is withdrawn.
2. The prior office actions are incorporated herein by reference. In particular, the observations with respect to claim language, and response to previously presented arguments.
3. Claims 1-11, 19-24 and 29 are allowed.

**RESPONSE TO ARGUMENTS**

4. The applicant's arguments regarding 35 USC 103(a) type rejections are fully considered. The previous 35 USC 103 (a) type rejections are withdrawn based on the applicant's arguments and the amendments made to the claims through the examiner's amendments presented in this office action.
5. The applicant's arguments regarding 35 USC 101 type rejections are fully considered, and found persuasive. The previous 35 USC 101 type rejections of claims 22-24 are withdrawn.

**EXAMINER'S AMENDMENT**

6. An examiner's amendment to the record appears below. Should the changes and/ or additions be unacceptable to the applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee. Authorization for this examiner's amendment was given in the telephone interview with the applicant's representative Mr. David Millers on August 27, 2009.

**Claims 1, 8, 19, 22 and 29 have been amended as follows:**

**Claim 1. (Currently Amended)** A method of enabling a second party to prove to a third party the existence of an association between the second party and a first party, the first party being associated with a first element of a first algebraic group, the second party being associated with a second element, element of a second algebraic group, the second element being formed from an identifier string of the second party using a hash function, and there being a computable bilinear map for the first and second ~~elements~~, wherein elements, wherein the method comprises:

a second-party computer entity, acting on behalf of the second party, performing the steps of:  
receives receiving a shared secret provided by the first party as the product of a first secret and the second element;

computes computing first, second and third verification parameters, wherein the first verification parameter is a product of a second secret and said shared secret, the second verification parameter is a product of the second secret and the second element and the third verification parameter is a product of the second secret and the first element; and

outputs outputting the first, second and third verification parameters for use by the third party in proving the association between the first and second parties, wherein the first, second, and third verification parameters enable the third party to verify the association between the first and second parties by performing checks that use the first, second, and third verification parameters and public information.

**Claim 8. (Currently Amended)** A method of verifying an association between a first party associated with a first element, element of a first algebraic group, and a second party associated with

a second ~~element~~, element of a second algebraic group, the first and second elements being such that there exists a bilinear mapping  $p$  for these elements, the method comprising:

a third-party computer entity carrying out the following operations:

receiving both data indicative of said first element, and a first product formed by the first party from a first secret and the first element;

receiving in respect of the second party an identifier string and first, second and third verification parameters;

computing the second element from the identifier string of the second party;

carrying out a first check to determine that the following equality is satisfied:

$p(\text{third verification parameter, computed second element}) = p(\text{first element, second verification parameter})$

carrying out a second check to determine that the following equality is satisfied:

$p(\text{first element, first verification parameter}) = p(\text{first product, second verification parameter})$

verifying the existence of the association between the first and second parties only where checks are passed.

**Claim 19. (Currently Amended)** Apparatus arranged to enable a third party to verify an association between the apparatus and a first party that has a first secret and is associated with a first element of a first algebraic group, the apparatus being associated with a second element, of a second algebraic group, and the first and second elements being such that there exists a bilinear mapping  $p$  for these ~~elements~~, elements, the apparatus comprising:

a memory for holding a second secret and an identifier string associated with the apparatus,  
means for forming said second element from said identifier string using a hash function,  
means for receiving from the first party a shared secret based on said first secret and said first element, and for storing this shared secret in the memory,  
means for computing first, second and third verification parameters, wherein the first verification parameter is a product of the second secret with said shared secret, the second verification parameter is a product of the second secret and said second element and the third verification parameter is a product of the second secret and said first element, and  
means for making available said identifier string and said verification parameters to the third party, wherein the first, second, and third verification parameters enable the third party to verify the association between the first party and the apparatus by performing checks that use the first, second, and third verification parameters and public information.

**Claim 22. (Currently Amended)** Apparatus for allowing a third party to verify ~~verifying~~ an association between a first party associated with a first ~~element~~, element of a first algebraic group, and a second party associated with a second ~~element~~, element of a second algebraic ~~group~~; group, the first and second elements being such that there exists a bilinear mapping  $p$  for these ~~elements~~; elements, the apparatus comprising:

means for receiving both data indicative of the first element, and a first product formed by the first party from a first secret and the first element;

means for receiving in respect of the second party both an identifier string, and first, second and third verification parameters;



a memory for holding information received through the means for receiving;

means for computing the second element from the identifier string of the second party using a hash function;

means for carrying out a first check to determine that the following equality is satisfied:

$p(\text{third verification parameter, computed second element}) = p(\text{first element, second verification parameter})$ ;

means for carrying out a second check to determine that the following equality is satisfied:

$p(\text{first element, first verification parameter}) = p(\text{first product, second verification parameter})$ ;

means responsive to both checks being passed, to confirm that there exists an association between the first and second parties.

**Claim 29. (Currently Amended)** A method of enabling a second party to prove to a third party the existence of an association between the second party and a first party, the first party being associated with a first element of a first algebraic group, the second party being associated with a second element, of a second algebraic group, formed from an identifier string of the second party using a hash function, and there being a computable bilinear map for the first and second elements, wherein the method comprises:~~;~~wherein

a second-party computer entity, acting on behalf of the second party, performing the steps of:

(1) ~~receives~~ receiving a shared secret provided by the first party as the product of a first secret and the second element;

(2) ~~computes~~ computing:

- (i) a first verification parameter as the product of a second secret with said shared secret,
  - (ii) a second verification parameter as the product of the second secret with the second element, and
  - (iii) a third verification parameter as the product of the second secret with the first element; and
- (3) ~~outputs~~ outputting the first, second and third verification parameters for use by the third party ~~in proving the association between the first and second parties, wherein the first, second, and third verification parameters enable the third party to verify the association between the first and second parties by performing checks that use the first, second, and third verification parameters and public information.~~

**EXAMINER'S REASONS FOR ALLOWANCE**

7. The following is an examiner's statement of reasons for allowances:

Independent claims 1, 19 and 29 are patentable over the cited prior arts because they do not anticipate nor fairly and reasonably teach independently or in combination, a method/ apparatus comprising besides other limitations: the second element being formed from an identifier string of the second party using a hash function, and there being a computable bilinear map for the first and second elements, wherein a second-party computer entity, acting on behalf of the second party, computing first, second and third verification parameters, wherein the first verification parameter is a product of a second secret and said shared secret, the second verification parameter is a product of the second secret and the second element and the third verification parameter is a product of the

second secret and the first element; and outputting the first, second and third verification parameters for use by the third party wherein the first, second, and third verification parameters enable the third party to verify the association between the first and second parties by performing checks that use the first, second, and third verification parameters and public information.

In particular, patentability exists, at least in part, with the recitation of a second-party computer entity, acting on behalf of the second party, computing first, second and third verification parameters using shared secret, second secret and elements of algebraic groups, and outputting the first, second and third verification parameters for use by the third party wherein the first, second, and third verification parameters enable the third party to verify the association between the first and second parties by performing checks that use the verification parameters.

Independent claims 8 and 22 are patentable over the cited prior arts because they do not anticipate nor fairly and reasonably teach independently or in combination, a method/ apparatus comprising besides other limitations: allowing a third party to verify an association between a first party associated with a first element of a first algebraic group, and a second party associated with a second element of a second algebraic group; and a third-party computer entity receiving both data indicative of said first element, and a first product formed by the first party from a first secret and the first element, and receiving in respect of the second party an identifier string and first, second and third verification parameters; and carrying out a first check to determine that the following equality is satisfied:  $p(\text{third verification parameter, computed second element}) = p(\text{first element, second verification parameter})$ , and carrying out a second check to determine that the following equality is satisfied:  $p(\text{first element, first verification parameter}) = p(\text{first product, second verification$

parameter); and verifying the existence of the association between the first and second parties only where checks are passed.

Dependent claims 2-7, 9-11, 20-21 and 23-24 are allowed because of their dependencies on the allowable independent claims.

### **CONCLUSION**

8. Claims 1-11, 19-24 and 29 are patentable.
9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays should be clearly labeled "Comments on Statement of Reasons for Allowance."
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shanto M Z Abedin whose telephone number is 571-272-3551. The examiner can normally be reached on M-F from 10:00 AM to 6:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Moazzami Nasser, can be reached on 571-272-4195. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Shanto M. Z. Abedin

Examiner, A.U. 2436

/Nasser G Moazzami/

Supervisory Patent Examiner, Art Unit 2436